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ABSTRACT

This manual provides the steps in planning a post-occupancy evaluation of library facilities to determine how effective the designed environment is for users. Evaluating a building provides a feedback loop to the planning process and can help fine tune the building or help others. The first actions of the planners are to clarify the purpose; gain support and endorsement; determine limitations or constraints; and determine level of efforts. They should also learn where to look and to identify objectives of the evaluation. When designing the evaluation, planners will have to decide where the information will come from and who should be involved in the process. The methodology of the evaluation needs to be chosen and the following methods are described: sampling and statistics; performance measures; questionnaires; interviews; focus groups; diaries; and unobtrusive measures. The manual addresses expert evaluations; sequence of access; staff productivity; hierarchy of use; machine requirements; and physical design considerations. Finally, the processes of conducting the study and reporting of the findings are examined. A planning outline is appended. (Contains 11 references.) (JLB)

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Evaluating Library Buildings:
Principles and Procedures for Post-occupancy Evaluation

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Prepared with the support of an LSCA grant
Connecticut State Library, Richard Akeroyd, Director
March 1991

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Acknowledgement

Since 1988, the Connecticut State Library has designated Library Services and Construction Act (LSCA) funds to support development of this and earlier versions of a post-occupancy evaluation manual. The Connecticut State Library has also arranged LSCA funding for evaluations at the Lucy Welles Robbins Library in Newington, Connecticut (1990), and the Somers Public Library and the West Hartford Public Library (1991).

Many people contributed to these studies, manuals and documentary reports. Richard Akeroyd, Connecticut State Librarian, and Mary Louise Jensen, State Library building consultant, have shown a strong commitment to the idea that evaluation must go hand in hand with the planning of library facilities. Methods for the post-occupancy evaluation were adapted from the work of many listed in the appended bibliography, but especially Robert Marans, Kent Spreckelmeyer, and Craig Zimring.

The idea and leadership for these post-occupancy evaluation projects, including this manual, comes from Nolan Lushington. Without his vision and desire to improve the quality of library buildings and library services, none of these innovative projects could have been possible.

Introduction and Rationale

Although a great deal of money is spent every year to program, design and construct library facilities, it is unusual for anyone involved in the process to step back and systematically examine whether the completed building achieved its goals or to consider how the building functions at the service level.

Definition

Post-occupancy evaluation is "the examination of the effectiveness of designed environments for human users" (Zimring and Reizenstein, 1980). It deals with both physical and social aspects of the building and the relationship between the two. The evaluator gathers information on the appearance, efficiency and logical integrity of the building. But just as importantly, the evaluation must examine the experiences, perceptions, attitudes, and feelings of the people who use or work in the environment (Daish, 1982, page 77).

Post-occupancy evaluations are usually the final step in the process which follows the planning, designing, and construction of a new library building. However, most libraries could benefit from systematic appraisals throughout the life of the building.

Why Do It?

Evaluation of a new building provides a valuable feedback loop. A detailed, careful examination can help fine-tune the building or it can help others learn from the experience. It can also help establish accountability for the complex and costly process of putting up a new library. It can systematically get information to those involved in planning, designing,

construction, and operation of library buildings. It tells policy makers and funding authorities, building consultants, architects, builders, and library administrators what they did well and what they could do better.

An evaluation can help:

- Refine and modify the physical plant and furnishings.
- Collect management information in order to reallocate staff and facilities to better serve the community using the new building.
- Justify additional funding to be used for adjustments and modifications.
- Assist other libraries planning new buildings.
- Justify past investment in new building by funding authorities.
- Help planners and designers learn from the experience so that another library does not repeat the same mistakes.

Sequence of Steps

Preparation is the key to successful building evaluation. Weak post-occupancy evaluations usually lack focus, do not have clear objectives, or use haphazardly prepared instruments. Evaluators need to agree on standards and to specify the criteria which will determine whether or not the building is a success. Informality in preparation, execution, and presentation of the study usually means that the results will have limited impact beyond the evaluators themselves.

The progression of steps in a building evaluation should allow evaluators to learn from the previous step. For example, early interviews with building planners and library staff could provide important information concerning conceptual orientation for the project. This could be used to select and develop more detailed information gathering methods or to help direct the inquiry of the expert evaluators later on.

The sequence of steps is not carved in stone, however. Each stage may overlap one or more other stages. An interview with a staff member could suggest a major question which the team should examine more closely. Even dissemination of findings, normally the final step, should be preceded by interim reports and preliminary discussion of findings. The evaluation team should be prepared to modify the sequencing as the study progresses.

First Actions

Before the evaluation gets off the ground, planners should address basic issues:

Clarify the Purpose. Long before establishing specific objectives, the evaluators should first examine why the study will be conducted. For example, is the intent to improve the functioning of the library or to share a success with others?

Gain Support and Endorsement. The evaluation team must realize that there are people who can support or sabotage the post-occupancy evaluation. The success of the study depends on understanding their needs and gaining their cooperation.

Determine Limitations or Constraints. Resources, including time and money, are limited. The evaluators should determine what personnel and skills are available to draw on and what limitations might be imposed by funding authorities or policy makers.

Resources. A post-occupancy evaluation can range from a one day project to a lengthy, multi-site study. Cost effectiveness should be considered in the design of the study. For example, while individual interviews are often used, group interviews with two to six people could hold costs in line (Zimring, page 288).

Costs. The cost of surveying, honoraria for experts and other expenses can be significant. Zimring (1987) developed several formulas to determine the cost of a post-occupancy evaluation. Costs have run .25 to 1.25 percent of the cost of construction or 5 to 8 percent of the design fee. The price of the post-occupancy evaluation of a $2 million building might total $5,000 to over $25,000.

Timing. Scheduling and timing are also important. The evaluation team should have the ability to respond to new leads and to pursue unexpected openings that turn up in the data collection process.

Determine Levels of Effort. This determination is related to limitations and constraints. There is a continuum ranging from simple, inexpensive efforts to lengthy, sophisticated evaluations that use expert authorities and technical measurement of facilities.

Basic level: This primary level uses informal and often unobtrusive methods to gather information from available sources, such as circulation statistics, turnstile count, etc.

Staff may be interviewed but there may be no attempt to survey a broader community. This type of evaluation might be done by one person in a short time.

Moderate level: This level might add behavior mapping and more interviews.

Extensive level: Methodologies could include surveying, interviews, and focus groups. Data could be gathered from staff, users, non-users, policy makers, designers, and others. Team leaders could bring in architects and library consultants for their expert evaluation. Some studies have included objective measurement of lighting, glare, noise, temperature and humidity in different areas.

Preliminary Data Collection: Looking Around

In order to plan a post-occupancy evaluation, the evaluators must learn where to look. Reconnaissance is necessary before evaluation objectives and specific data gathering procedures can be developed. The clues will come from walking around, talking with those involved with the library, and reading key documents and correspondence. Introductory interviews with planners, policy makers and other key personnel are useful in the reconnaissance phase.

The building consultants and architects can tell the evaluators about their intentions and the rationale for decisions. Administrators and department heads can relate the history leading up to construction and suggest questions that need to be answered. Planning documents, including the building program, should be examined. Understanding what went before can shed a great deal of light on why things are the way they are in the present building.

Objectives

After the reconnaissance phase, the researchers are able to generate and screen potential objectives for the evaluation project. Objectives are important because they bring focus to the study and they relate directly to the data collecting methods. The objectives can be relatively broad or quite specific and can come from different sources. Objectives might come from:

• The role and mission statements of the library. For example, a public library which sees its primary role as a popular library must example the physical facility in that light.

• The objectives of the building program. For example, the planners may have sought to improve access to A-V materials or expand the number of seats in quiet study areas. Evaluation goals should seek to learn how successful they were in meeting those goals.

• Concerns of the staff about some aspect of the building. For example, if library personnel sense that users are unable to find bound periodicals, the evaluation could specifically target the signage system.

• Outside sources, such as funding authorities which require the evaluation. These objectives could be explicit or implied.

The scale of the evaluation should also be reflected in the objectives. A library with a new wing might choose to evaluate only that wing or only a public function most directly affected, such as reference services. This narrowing should be considered carefully, however, since a change in one part of a building can significantly affect usage and traffic patterns in other parts of the library.

Feasible objectives include:

• To enumerate changes in staff productivity since moving into the new quarters.

• To describe the movement of library users from the entrance to the major service areas in the new building.

• To compare output measures between the old and new facility.

• To compare public users attitudes toward the library since occupying the current facility.

Designing the Evaluation

Detailed design of the evaluation follows the preliminary preparation, reconnaissance, and objective writing phases. Evaluators need to chart out where the information will come from and how it be be gathered and analyzed.

Post-occupancy evaluation works best when there is a team with a variety of skills and perspectives. Most evaluations will require personnel with specific skills and knowledge and a local coordinator to link various personnel and attend to logistical requirements. The composition and responsibilities of the evaluation team depend on the objectives, limitations, planned level of effort, funding, and other factors.

Good post-occupancy evaluations are well thought out. But the very best plan is one that can remain open, flexible and responsive to changing conditions. A chance remark by a staff member during an interview may provide a key that should be followed up even if it means revising the plan. An evaluation plan should be able to respond to and use emerging information (Zimring, p. 274-75).

Local Coordinator

Post-occupancy evaluation requires considerable activity and cooperation by the library staff. The need for communication and follow-through mean that it cannot be conducted or managed by remote control. For these reasons, the coordinator normally should be someone on the staff of the library being evaluated.

It has been suggested that the best post-occupancy evaluations belong to the libraries that

conduct them. In this sense, the evaluation is something done *by* the library; it is not something done *to* it. Furthermore, the evaluation is only the beginning of a change process — to be truly fruitful the evaluation should result in modification in the building, policies, or other aspects of the library. Commitment by library administrators and the library staff is necessary for change to actually take place. Trust and acceptance of the evaluation are best achieved by staff involvement and commitment to the evaluation.

Care should be taken in selecting the local coordinator. The designated staff member must:

- Have the time to do a good job. This includes time to read, study and acquire skills.
- Have a sincere interest in the evaluation process and in developing a better facility. The coordinator cannot be a reluctant appointee.
- Have research or empirical/objectivist orientation and values. They should not have biases or attitudes that will interfere with the evaluation.
- Be a teacher and communicator.
- Have the trust of the staff and administrators.

The evaluation coordinator has important responsibilities. They must learn the process and procedures for conducting a post-occupancy evaluation, work with the evaluation team to develop a specific methodology, communicate with and teach the library staff and administrators about the evaluation, and communicate with and coordinate activities of outside evaluators. In sum, they must manage the study, make sure that documents are distributed in a timely manner and that all parties understand their jobs.

Relationships between Staff

Each member of the evaluation staff must understand their own roles and those of their colleagues. Evaluators cannot work in isolation; they must have knowledge of the evaluation objectives, the data gathering methods being used, and other relevant background Everyone should also benefit from sharing information gained by other team members. Frequent meetings and access to relevant documents are the key to communication. This is especially important when, as often happens, some members of the evaluation team play somewhat limited or specialized roles. Specialization, however, should not mean separation from the other members of the team.

Outside Experts

Much of the evaluation can be done with local staff. It may, however, be beneficial to use outside help in order to:

- Provide subject expertise. Evaluation of mechanical systems or elements of the design may require outside experts.
- Provide methodological expertise. Local personnel may not have skills to select evaluation goals, develop instruments, or collect data. In those cases, a consultant could help guide the study, train the staff or actually collect information.

Facility Experts

Library building consultants and architects who have experience with a variety of libraries can bring to the post-occupancy evaluation a perspective beyond the capability of most staff and users. They know how an effective library works. Their reading and thinking about a variety of solutions to library design issues can lead to meaningful comparisons of service and building excellence.

The expert evaluators must have significant experience, however. The library building consultant should have experience with five or more projects while the architect should have work experience with at least three libraries. Experts should be compensated at their usual daily rates. The evaluation could take several days work with at least one day on site.

Qualified candidates can be identified through:

- Library Buildings Consultant List (American Library Association)
- Local chapters of the American Institute of Architects
- State Library agencies
- Local library associations

Methodologists

Experts in gathering data may also contribute to the post-occupancy evaluation. Focus groups require trained and experienced leaders; surveys can often be improved by bringing in people with experience in drafting questionnaires. Staff with statistical or computer expertise and clerical support to process and tally survey data may also be needed. Behavior mapping may

require hours observing how library users interact with the building, facilities, seating, or other physical aspects.

Sources of Information

Perhaps the best way to find out how the building works is to directly ask the people involved or to watch them using the building. Even mechanical aspects, such as heating, ventilation and air conditioning, are interpreted and filtered through human perceptions.

These sources could include:
Library employees. The people who work in the library can tell the evaluators how the building affects staff efficiency but they can also provide valuable data on how well library users relate to the building. All employees should be brought into the evaluation. Evaluators should keep in mind that the support staff, maintenance and custodial personnel are especially valuable sources of information.

Users. Evaluators must decide which users to target and how to gather information from them. Users might be distinguished by demographic characteristics such as age, income, or ethnic background. The sample could be stratified (20 percent seniors, 40 percent children, for example) rather than completely random or even purposely sampled in order to assure balance, for example, among participants in a focus group.

Others. Community leaders, political figures, funding and policy authorities, trustees, and others can help the evaluation team understand the pre-history and rationale of the design. Many of these were involved since the reconnaissance phase.

Analysis

In many studies, raw data is not synthesized into a useful form because the planners did not anticipate the need for analysis. The evaluators should determine how specific information will be used and analyzed before it is collected. Unnecessarily long questionnaires waste the time of respondents and researcher. If the evaluators are not sure how a question will be used, it should be dropped.

Evaluation Standards

Description of the building is not enough in post-occupancy evaluation. Judgments must be made and the evaluators must plan how they will draw conclusions about the suitability and efficiency of the building. What is good and bad design? How can the evaluators recognize an effective or ineffective building? How will they decide physical and aesthetic questions? What will be the basis for judgment?

There are different ways to do this:
Comparisons. The public, staff and others often compare the new library to the old facility. The staff might evaluate on the basis of what their colleagues and peers have (better view, closer to the boss or the shelf list, etc.) or their personal aspirations and expectations. Comparison standards are more objective when output or performance measures are compared. Circulation, number of reference questions asked, attendance at programs and other statistics in the old facility can be compared with similar figures gathered since the move to the new facility.

Goal-based Evaluation. These standards are the objectives established by the planners. If their program set out to improve staff efficiency, the evaluators can apply that goal as the standard.

Other Standards. Normal spatial proportions and ratios (as the area for workstations or the usual percentage of unassigned area), costs of comparable buildings, number of parking spaces, seating, bookstacks and so forth can be used as a standard. Criterion developed by governmental agencies or professional associations, such as the Library Administration and Management Association's Checklist of Library Building Design Considerations, can also be used to guide evaluation of functions and services.

Methodologies

The methods presented here should be seen as options available to the evaluator. The specific choice will depend on the purpose, objectives and scope of the post-occupancy evaluation. For example, a library that seeks to reallocate staff and justify additional funding could emphasize internal, quantitative methods. Another library might justify a grant by emphasizing expert evaluations and comparative data from other buildings.

The scope of the study can also influence the methodologies used. An evaluation with an objective to examine use of different seating might use behavior mapping techniques. If an objective is to determine the effect of the building on support in the community, then a focus group might be the best choice. Generally, the best strategy is to use a combination of methodologies.

Sampling and Statistics

Excellent studies can be conducted with limited statistical expertise. Most studies require only descriptive statistics, such as averages and median values, although more sophisticated statistical analyses could be used.

Relying on volunteer samples or passing out surveys at the door are usually not good ways to conduct research. People who volunteer to fill out a survey instrument are not typical and tend to be more favorably disposed to the library. Information from a hundred randomly selected respondents may be preferable to a thousand responses from library users who volunteered to complete a questionnaire.

Performance Measures

Performance and output measures are especially useful for post-occupancy evaluations. They are quantitative, reasonably objective, and normally easy to use. Circulation and library use normally increase after opening a new building. With these methods it is possible to track trends over a number of years and better discern the impact of the building. Analysis of output measures might suggest the need to reallocate, reassign or hire additional personnel. For example, a 50 percent increase in reference questions or a doubling of adult non-fiction circulation is convincing evidence for additional staff.

Some of the most commonly used output measures include:

- Circulation statistics, including break downs by type of user (adult, student, children, etc.) and type of material (fiction and non-fiction, A-V materials, etc.) If the design emphasized particular areas or collections (for example, archives, Spanish language, Young Adult materials) should be watched to note changes in use patterns.
- Library visits per capita
- Program attendance per capita
- Title, author, subject browsing percentage
- Reference transactions per capita
- Turnover rate

Questionnaires

Questionnaires are excellent ways to get information cheaply and efficiently from staff and users. Questionnaires and interviews can vary by the amount of control and structure imposed on responses. Closed-ended formats are easy to fill out and analyze. Open-ended formats are preferred when the evaluators want users in their own words to describe attitudes or how they use the building. The less structured format is also preferred in early or exploratory data gathering.

The best questionnaires are brief and well thought-out. Evaluators must give attention to typography and the design of the page; the arrangement and flow of questions must be logical. Every question on the questionnaire should be there for a specific reason; evaluators must resist the temptation to ask questions out of curiosity. The selected sample should be treated well: they should get personalized letters which explain the importance and relevance of the

study. Follow-up letters and phone calls should be used to pursue those who do not respond.

Interviews

The merits of structured and unstructured questionnaire formats also applies to interview instruments or schedules. Open-ended questions in interviews are especially important for getting respondents to reveal what is significant to them. Sometimes the evaluator will have a general map of the discussion but allow the respondent to answer in his or her own words. Interviews are more expensive and take longer to conduct than questionnaires but some people will participate in an interview who would refuse to fill out a questionnaire. Also, questionnaires many not be appropriate with some library users, such as younger children.

Walk-Through Interviews

This methodology was used in several post-occupancy evaluations in New Zealand. It is a very efficient way to gather a great deal of information from many people (Daish, 1982; Zimring, page 285-86). In this data gathering method, an evaluation team walks through the building and interviews staff and others in their normal work place. The primary advantage is that references to specific aspects of the building are made in the environment and the evaluator's understanding of comments can be clarified and reinforced by the dialogue.

Evaluators may give a brief (30 minute) introduction and explanation of the study before the walk-through. They then meet with building occupants in their normal work place for another 30 to 60 minutes. Afterwards, a debriefing or summary conference is held where the evaluators clarify their perceptions and ask for recommendations. The interview format is largely unstructured and responsive to leads presented by the work being done, the comments of the staff, or aspects of the area.

Focus groups

This methodology is frequently used in marketing research to collect a great deal of in-depth information from a small sample. It is especially valuable for gathering information on deeply seated feelings about the library. Because conversations are held in a group setting, discussion often helps participants articulate attitudes and opinions which were previously not

well defined. If questionnaire surveys are sometimes criticized as being a mile wide and an inch deep, focus groups may be said to be an inch wide and a mile deep.

Normally, a trained focus group leader leads a two to three hour discussion of 12 to 15 library users or staff members. A focus group is not simply a group interview, however. A trained and skilled leader will be able to probe and explore motives. An unskilled focus group leader might ask one dimensional questions (what services do you use?) that could better be gathered by observation, survey, or by output measures.

Diaries

This technique can be useful for collecting data from staff. Many different formats have proved successful such as precoded checklists, cards to record movements and traffic patterns, and conventional journal entries. Diaries may be used to record only specific and concrete information shortly after it occurs (Zimring, page 291). Administrators might be asked to record "critical incidents" as, for example, when an area became congested or they received a complaint about some aspect of the building. The custodial staff could note when they encountered a maintenance problem or breakdown.

Unobtrusive Measures

Evaluators can learn a great deal about the library and its use by looking at how things wear ("erosion") and the things left ("traces") in the building. Reference materials on tables far from the reference area, for example, may suggest that administrators might want to examine the seating, lighting, noise control or other aspects of the reference area. "Adaptions for use" can also tell evaluators about the success (or failure) of some aspect of the building. Adaptions are things that library users do to make the environment more to their liking. They indicate that the environment did not serve its original intentions very well or that users imposed different intentions. These "improvements" might include moving furniture around, pushing tables together, or using chairs as hassocks. They suggest that the library might need bigger tables, more lounge chairs and repositioning of furnishings. Rather than fighting these adaptions and struggling to reimpose the library's sense of how things should be, the evaluators should see traces as opportunities to modify and improve the facility.

Observation. Observation techniques can give the researchers an empathetic understanding

because the evaluators are exposed to the full range of behaviors, discussions, traffic flow, use of furnishings, and other activities that take place in the area (Zimring, p. 291). They can be obtrusive or unobtrusive and can be used alone or to verify other reports.

Observation methods can be detailed and specific or impressionistic and exploratory. Impressionistic observations are made early in the library walk-around to identify questions to pursue further. In observing staff work areas, the evaluation team should go beyond the physical properties of the work areas and examine how the facility ties into the dynamics of the work place. The team will want to consider issues relating to both formal and informal lines of authority and channels of communication.

Behavior Mapping. Behavior Mapping is a systematic technique for recording detailed observations. This methodology notes behavior on a floorplan , identifies the kind and frequency of behavior and demonstrates their association with a design feature. It is usually done on a small scale, such as a room or well-defined area of the library.

The steps for building a behavior map are:

- Create a floorplan with grid marking each square foot of the area to be studied. The map should be detailed and include furnishings and all physical elements.
- Decide on categories of behavior to be recorded. This is a critical stage because it defines the types and magnitude of behaviors that will be noted by the evaluators. Behaviors might include things like talking, reading, walking, sleeping, etc.
- Give each behavior a code or discrete abbreviation.
- Observe the area under study and record each behavior on the map using the code and a second code which reflects the time frame.

Substantive Orientation and Data Collection

What should the evaluation team look for? Evaluators may need a sense of what is possible, desirable and good in a library building. There are many excellent books on library design and anyone planning to evaluate a building should be reasonably well versed in those design principles.

The Checklist of Library Building Design Considerations (Library Administration and Management Association's Architecture for Public Libraries Committee) gives the evaluators a list of over 324 design features. The main sections deal with accessibility, bookstacks and shelving, children's facilities, circulation, convenience facilities, equipment, the exterior, future developments, mechanicals and noise control, reference facilities, the interior, communication equipment and the environment, security systems, seating, and the site.

The Checklist does not, however, guide evaluators in judging which considerations are more or less valuable to a particular library. Those decisions should be based on the library's mission, roles, and objectives.

Expert Evaluation

Outside authorities, such as library planners and architects, can be brought in to provide expertise for the post-occupancy evaluation. The evaluation director should allow considerable latitude to the experts in how they go about their work. They should be encouraged to draw on their range of experience and the structure of the evaluation should not

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inhibit their expertise or creativity.

However, they should recognize that they are a part of the evaluation team working to achieve common, mutual evaluation goals. They should be full participating members and must understand those common, mutual evaluation goals, the evaluation methods others plan to use, and any information gathered about the facility. They should read and understand the POE Manual and be committed to fully coordinating their work with the other members of the evaluation team.

It may be useful to suggest an array of tools and approaches that they may find useful. The Checklist of Library Building Design Considerations should be available to them as well as data collected in the early phases of the post-occupancy evaluation. This information might include surveys, focus group, and statistical reports. They should also be given a copy of the building program and a furniture layout at least a week before they visit the facility.

The experts evaluation might be organized in terms of personal reactions (what they liked or didn't like); cost or difficulty of adjustment (things that can be easily changed such as furniture and things that require long range planning); or other physical aspects (exterior and interior architecture, mechanical systems, maintenance, graphics and so forth).

Sequence of access

Spatial relationships and the flow from one part of the library to another is important in the evaluation. However, there are many different sequences of access, each reflecting different needs and uses of the library.

An excellent way to visualize these sequences is to imagine a patron entering the building. The evaluator should consider the many different uses of the library and how those uses will affect the user's movements. A browser's approach will differ from the library user who is looking for a specific fact. What will each patron see first? On moving into the building, what features will dominate? Will he or she recognize where to go and how to get what they need? Is the path open and intuitive? Or is it confused and crowded by collections of materials and equipment? Do tall bookstacks or tower display racks block the view of major collections or service areas? Are the relationships logical and efficient?

Staff Productivity

Staff efficiency is a particularly important element in the building's design. Work areas and the movement of materials must be efficient and logical with materials following a natural and simple progression from the library's loading dock to the cataloging/processing area and then to public areas. People or materials should not have to move up and down between floors or from one end of the building to another. Similarly, the movement of staff should not interfere with productive work. For example, personnel from the reference or A-V department should not have to walk through cataloging work area in order to get to the restrooms or staff lounge

Hierarchy of Use

The design should reflect the fact that some materials and different parts of the library get more use than others. There are two sides to the hierarchy of use: Intensity of use and the length of time used. Some areas are used by many but not necessarily for a long period of time while other areas are used by fewer people but for longer periods. In general, areas with the greatest intensity of use should be located nearest the entrance and near to one another. Circulation, the browsing area, and reference are usually intensely used areas. Low intensity areas and those parts of the library used for longer periods of time can be located at greater distance from the entrance. Study areas and the areas with back issues or bound periodicals are used for longer periods of time in most libraries.

Noise control is another concern which should be reflected in the design. Intensely used areas tend to be noisy and should be shielded or distant from quiet readings areas. Because traffic creates noise, the route between two high intensity areas should be direct and not through a low intensity area. For example, access to the children's area should not be through the adult reading area.

Machine Requirements

Libraries and library users are increasingly dependent on technology to store and retrieve information. Evaluators must consider how the design deals with equipment and the relationship between materials and the machines needed to use them. The evaluation should examine whether the machines are near the area where supplies (such as paper for photocopiers or toner for printers) are stored.

The machines used in libraries often require staff assistance in order to assist patrons, trouble-shoot problems, and replace supplies such as paper. The design must also provide staff access within the immediate area and from other work areas and should also make it easy to remove and repair equipment.

Other Physical Aspects

Physical considerations and design issues in library buildings are very wide ranging. Some factors to examine include:

- Signage, both inside and outside the building.
- Parking. Is it adequate and safe? Is access from parking simple, direct and attractive?
- Exterior lighting and user security.
- Appearance, noise, etc.
- Maintenance and custodial access. Design features should be attractive but also easy to clean.
- Restrooms and lounges.
- Access to the disabled.
- Adequacy of mechanical devices; heating, temperature, humidity, lighting, etc.
- Seating and reading areas. Is there enough of the right kind? Do users have choices?
- Meeting rooms. Are the furnishings adequate? Is access and control appropriate?

Conducting the Study

When the evaluation team has thoroughly planned the study, most of the hard work is done. Once critical evaluation design decisions are made, data collection requires more patience and clerical skills than creativity and professional expertise. None-the-less, there are a number of concerns which must be addressed.

Rigor and Relevance. Although data collecting may settle into a routine, the research team must stay alert for problems. All aspects of the study should be impartial, objective, systematic, and fair. The evaluators should look for and take steps to insure that any potential bias is kept in check.

There are any number of fine textbooks and articles which provide guidance to achieving rigor

and which spell out the details for sound, accurate methods. An excellent book on methods of gathering data for post-occupancy evaluation is Methods in Environmental and Behavior Research, edited by Robert B. Bechtel, Robert W. Marans, and William Michelson (Van Nostrand Reinhold, 1987).

While scientific rigor should be pursued in all aspects of the study, relevance and efficiency should not be overlooked in the study. Random sampling, for example, is the kind of rigor that should be a part of nearly every study. However, purposive sampling may be more cost effective and arguably a more realistic measure of sentiment. A random sample of library users might not include representatives from significant minority or leadership groups even though the were central to the evaluation objectives. This consideration is especially important when selecting small groups to participate in focus group discussions.

Limited groups can often point out shortcomings as well as large ones. The evaluation does not need a random sample of 10,000 users to tell it that the A-V collection is hard to find or that there are not enough lounge chairs. As Tom Peters pointed out in Thriving on Chaos; Handbook for a Management Revolution, effective listening can be done on a small scale.

Political Concerns. Libraries are political organizations. This is never more obvious than in the funding, design and construction of a new building. Politics can influence who the evaluators are able to collect information from and the candidness of their participation. As noted earlier, cooperation and support should be sought early in the evaluation and then developed and maintained throughout the process. Evaluators can mediate between different groups from time to time but they can also find themselves caught in local skirmishes. Keeping communication channels open throughout the process is extremely important.

Reporting and Dissemination

A post-occupancy evaluation is useless unless the evaluators present the findings in a way that can be used. A post-occupancy evaluation of libraries is not a theoretical exercise and its recommendations for action must be pragmatic and practical. The language should be clean and free of jargon. Graphics and charts can help clarify detailed data.

Evaluators point out that reporting should begin almost at the inception of the study. Key figures must be kept informed through out the planning and evaluation process. (Zimring, page 281). Different kinds of reports will help disseminate the findings. A multi-volume

report might have complete documentation of the questionnaire results, interview comments, and detailed environmental data but a shorter summary might get widespread reading. Still shorter documents, including posters, can be used for group presentations. Small group meetings and discussions may be among the best ways to share findings.

Assessing the Process

The evaluation of library buildings requires one final feedback loop (Daish, 1983). This step asks the team to evaluate the evaluation, that is, to examine how well the process worked and to consider where it could be improved:

- Did the evaluation achieve the goals established for it?
- What barriers to a good evaluation were encountered?
- How can those barriers be overcome?
- What were the strengths in the process?
- What were the weaknesses in the process?
- How could the evaluation process be made more effective?
- How could the evaluation process be made less costly?
- How could the evaluation process be done more quickly?
- How could the evaluation process be more objective?
- What will you do differently the next time?

Appendix: Planning Outline

The schedule for post-occupancy evaluations depends on the evaluation design, objectives, personnel, and other factors. A rough timetable for a typical evaluation might look like this:

(Week one)

Trainers give training materials/POE manual to the director and other staff.

Trainers explain basic evaluation pattern and staff involvement.

Discuss need for a coordinator. Ask director to identify a local POE coordinator and have key members of the staff read the instructional materials/manual.

(Week three)

Trainers discuss agenda for staff meeting with director and coordinator. Both should have read manual by the staff meeting. Manual should be available to other staff members.

(Week three or four)

Meeting with key local staff members involved with the POE. Size of the group (or the POE team) should usually not be larger that 10 or 12 participants. At this point, the task is to

Review basics of the POE process.

Respond to questions and gain support and endorsement.

Determine the purpose of the study, limitations or constraints, and level of effort.

After this meeting, staff should start the reconnaissance, "looking around," and preliminary interviews phase and begin to draft objectives.

(Week five or six)

Meeting of the Evaluation Team to review information gathered during the first phases.

Discuss and select objectives and questions to be answered in the evaluation.

Discuss and select methods for achieving goals and answering questions, including sources of information

Establish evaluation personnel for the subcommittees. These might be structured in relation to objectives or methodologies.

Discuss analysis, standards, statistics, sampling and creating instruments.

Discuss timelines, data collection, and other plans.

After the plan is approved by the evaluation team, additional evaluators, such as subject experts and methodologists, can be contacted, and a more precise schedule established. Then data collecting can begin.

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